

## PATENT COOPERATION TREATY

PCT

## NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Commissioner  
 US Department of Commerce  
 United States Patent and Trademark  
 Office, PCT  
 2011 South Clark Place Room  
 CP2/5C24  
 Arlington, VA 22202  
 ETATS-UNIS D'AMERIQUE  
 in its capacity as elected Office

<b>Date of mailing (day/month/year)</b> 31 October 2000 (31.10.00)	
<b>International application No.</b> PCT/SG99/00020	<b>Applicant's or agent's file reference</b> YWC/99358451
<b>International filing date (day/month/year)</b> 22 March 1999 (22.03.99)	<b>Priority date (day/month/year)</b>
<b>Applicant</b> BAO, Feng et al	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:

15 September 2000 (15.09.00)

☐ in a notice effecting later election filed with the International Bureau on:2. The election ☒ was☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

BEST AVAILABLE COPY

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	Authorized officer S. Mafla Telephone No.: (41-22) 338.83.38
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## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<p>(51) International Patent Classification <sup>7</sup> : <b>H04L 9/00</b></p>	<b>A1</b>	<p>(11) International Publication Number: <b>WO 00/57595</b></p> <p>(43) International Publication Date: 28 September 2000 (28.09.00)</p>
<p>(21) International Application Number: <b>PCT/SG99/00020</b></p> <p>(22) International Filing Date: 22 March 1999 (22.03.99)</p> <p>(71) Applicant (for all designated States except US): <b>KENT RIDGE DIGITAL LABS [SG/SG]; 21 Heng Mui Keng Terrace, Singapore 119613 (SG).</b></p> <p>(72) Inventors; and (75) Inventors/Applicants (for US only): <b>BAO, Feng [CN/SG]; 37 West Coast Park, #04-06, Parkview Condo, Singapore 127653 (SG). DENG, Huijie, Robert [SG/SG]; 2 Namly Rise, Singapore 267110 (SG).</b></p> <p>(74) Agent: <b>HELEN YEO &amp; PARTNERS; 80 Raffles Place, #33-00 UOB Plaza 1, Singapore 048624 (SG).</b></p>		<p>(81) Designated States: JP, SG, US, European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).</p> <p><b>Published</b> <i>With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i></p>
<p>(54) Title: <b>METHOD AND APPARATUS FOR ENCRYPTING AND DECRYPTING DATA</b></p> <p>(57) Abstract</p> <p>A method and apparatus for encrypting and decrypting data is disclosed which employs two or more cryptographic algorithms to achieve high throughput without compromising security. The invention is especially useful for software implementation to protect large amounts of multimedia data over high-speed communication channels.</p>		
<pre> graph TD     100[100: Divide data into segments d1, d2, ..., di, ...; input shared key k and initial value v0; set i = 0.] --&gt; 110{110: More data segment?}     110 -- No --&gt; Stop[Stop]     110 -- Yes --&gt; 120[120: i := i + 1; vi := F(vi-1); si := R(k, vi); ci := E(si, di)]     120 --&gt; 130[130: Send ci]     130 --&gt; 110           </pre>		

## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/SG 99/00020

## CLASSIFICATION OF SUBJECT MATTER

IPC<sup>7</sup>: H 04 L 9/00

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC<sup>7</sup>: H 04 L; H 04 N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

WPI, PAJ

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 0676876 A1 (INTERNATIONAL BUSINESS MACHINES CORPORATION) 11 October 1995 (11.10.95) abstract; page 3, line 33 - page 4, line 22; page 4, line 53 - page 5, line 8; fig. 1-4,6	1,14,24,37
A	WO 96/08912 A2 (TITAN INFORMATIONS SYSTEMS) 21 March 1996 (21.03.96) abstract; page 7, line 1 - page 11, line 15; fig. 1-3	1,14,24,37
A	US 5664016 A (PRENEEL et al.) 2 September 1997 (02.09.97) column 2, lines 54-67; column 6, lines 47-60; fig. 5.	1,5,6,24,28,29
A	JP 10-178421 A (TOSHIBA). Patent abstracts of Japan, Vol. 98, No. 11, 30 September 1998 (30.09.98)	1,24

☐ Further documents are listed in the continuation of Box C.☒ See patent family annex.

\* Special categories of cited documents:

„A“ document defining the general state of the art which is not considered to be of particular relevance

„E“ earlier application or patent but published on or after the international filing date

„L“ document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

„O“ document referring to an oral disclosure, use, exhibition or other means

„P“ document published prior to the international filing date but later than the priority date claimed

„T“ later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

„X“ document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

„Y“ document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

„&amp;“ document member of the same patent family

Date of the actual completion of the international search

21 August 2000 (21.08.2000)

Date of mailing of the international search report

23 August 2000 (23.08.2000)

Name and mailing address of the ISA/AT

Austrian Patent Office

Kohlmarkt 8-10; A-1014 Vienna

Facsimile No. 1/53424/535

Authorized officer

Hajos

Telephone No. 1/53424/410

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/SG 99/00020

Patent document cited in search report			Publication date	Patent family member(s)		Publication date
EP	A1	676876	11-10-1995	GB	A0 9406613	09-06-1994
				GB	A1 2288519	13-10-1995
				JP	A2 7281596	27-10-1995
				US	A 5548648	20-08-1996
JP	A2	10178421	30-06-1998	none		
US	A	5664016	02-09-1997	none		
WO	A2	9608912	21-03-1996	AU	A1 04619/96	29-03-1996
WO	A3	9608912	06-06-1996	CA	AA 2199526	21-03-1996
				EP	A1 787391	06-08-1997
				EP	A4 787391	08-04-1998
				US	A 5796829	18-08-1998

# PATENT COOPERATION TREATY

24/10/2000

From the  
INTERNATIONAL PRELIMINARY EXAMINATION AUTHORITY

## PCT

To:

HELEN YEO & PARTNERS  
80 Raffles Place  
#33-00 UOB Plaza 1  
SINGAPORE 048624  
REPUBLIC OF SINGAPORE

**PCT Rec'd 24 SEP 2001**

NOTIFICATION OF RECEIPT OF  
DEMAND BY COMPETENT INTERNATIONAL  
EXAMINING AUTHORITY

(PCT Rules 59.3(e) and 61.1(b), first sentence  
and Administrative Instructions, Section 601(a))

Date of mailing (day/month/year)	19 October 2000 (19.10.00)
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Applicant's or agent's file reference

YWC/99358451

**IMPORTANT NOTIFICATION**

International application No.

PCT/SG 99/00020

International filing date (day/month/year)

22 March 1999 (22.03.99)

Priority Date (day/month/year)

Applicant

KENT RIDGE DIGITAL LABS et al.

1. The applicant is hereby notified that this International Preliminary Examination Authority considers the following date as the date of receipt of the demand for international preliminary examination of the international application:

15 September 2000 (15.09.00)

2. ☒ The date of receipt is:

- ☒ the actual date of receipt of the demand by this Authority (Rule 61.1(b)).
- ☐ the actual date of receipt of the demand on behalf of this Authority (Rule 59.3.1(e)).
- ☐ the date on which this Authority has, in response to the invitation to correct defects in the demand (Form PCT/IPEA/404), received the required corrections.

3. ☐ **Attention:** The date of receipt is **AFTER** the expiration of 19 months from the priority date. Consequently, the election(s) made in the demand does (do) not have the effect of postponing the entry into the national phase until 30 months from the priority date (or later in some Offices) (Article 39(1)). Therefore, the acts for entry into the national phase must be performed within 20 months from the priority date (or later in some Offices) (Article 22). For details, see the PCT Applicant's Guide, Volume II.

- ☐ (If applicable) This notification confirms the information given by telephone, facsimile transmission or in person on:

4. Only where paragraph 3 applies, a copy of this notification has been sent to the International Bureau.

Name and mailing address of the IPEA/AT

Austrian Patent Office  
Kohlmarkt 8-10  
A-1014 Vienna

Facsimile No. 1/53424/200

Authorized officer

Koch

Telephone No. +43 / 1 / 53424 - 450

The demand must be filed directly with the competent International Preliminary Examining Authority or, if two or more Authorities are competent, with the one chosen by the applicant. The full name or two-letter code of that Authority may be indicated by the applicants on the line below:

IPEA/ AT

# PCT

## CHAPTER II

### DEMAND

under Article 31 of the Patent Cooperation Treaty:

The undersigned requests that the international application specified below be the subject of international preliminary examination according to the Patent Cooperation Treaty and hereby elects all eligible States (except where otherwise indicated).

For International Preliminary Examining Authority use only	
AUSTRIAN PATENT OFFICE	15 September 2000 (15.09.00)
Identification of IPEA	Date of receipt of DEMAND
<b>Box No. I IDENTIFICATION OF THE INTERNATIONAL APPLICATION</b>	
Applicant's or agent's file reference YWC/99358451	
International application No. PCT/SG 99/00020	International filing date (day/month/year) 22 March 1999 (22.03.1999)
(Earliest) Priority date (day/month/year) N.A.	
Title of invention METHOD AND APPARATUS FOR ENCRYPTING AND DECRYPTING DATA	
<b>Box No. II APPLICANT(S)</b>	
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)	
KENT RIDGE DIGITAL LABS 21 Heng Mui Keng Terrace SINGAPORE 119613 REPUBLIC OF SINGAPORE	
Telephone No.: (65) 874-7588	
Facsimile No.: (65) 776-8109	
Teleprinter No.: N.A.	
State (that is, country) of nationality: SG	State (that is, country) of residence: SG
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)	
BAO, FENG 37 West Coast Park #04-06, Parkview Condo SINGAPORE 127653 REPUBLIC OF SINGAPORE	
State (that is, country) of nationality: CN	State (that is, country) of residence: SG
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)	
DENG, HUIJIE, ROBERT 2 Namly Rise SINGAPORE 267110 REPUBLIC OF SINGAPORE	
State (that is, country) of nationality: SG	State (that is, country) of residence: SG
<input type="checkbox"/> Further applicants are indicated on a continuation sheet.	

**Box No. III AGENT OR COMMON REPRESENTATIVE; OR ADDRESS FOR CORRESPONDENCE**The following person is ☒ agent ☐ common representativeand ☒ has been appointed earlier and represents the applicant(s) also for international preliminary examination.☐ is hereby appointed and any earlier appointment of (an) agent(s)/common representative is hereby revoked.☐ is hereby appointed, specifically for the procedure before the International Preliminary Examining Authority, in addition to the agent(s)/common representative appointed earlier.Name and address: *(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)*HELEN YEO & PARTNERS  
80 Raffles Place  
#33-00 UOB Plaza 1  
SINGAPORE 048624  
REPUBLIC OF SINGAPORE

Telephone No.:

(65) 2161-609

Facsimile No.:

(65) 557-2322

Teleprinter No.:

N.A.

☐ Address for correspondence: Mark this check-box where no agent or common representative is/has been appointed and the space above is used instead to indicate a special address to which correspondence should be sent.**Box No. IV BASIS FOR INTERNATIONAL PRELIMINARY EXAMINATION****Statement concerning amendments:\***

1. The applicant wishes the international preliminary examination to start on the basis of:

☒ the international application as originally filedthe description ☐ as originally filed  
☐ as amended under Article 34the claims ☐ as originally filed  
☐ as amended under Article 19 (together with any accompanying statement)  
☐ as amended under Article 34the drawings ☐ as originally filed  
☐ as amended under Article 342. ☐ The applicant wishes any amendment to the claims under Article 19 to be considered as reversed.3. ☐ The applicant wishes the start of the international preliminary examination to be postponed until the expiration of 20 months from the priority date unless the International Preliminary Examining Authority receives a copy of any amendments made under Article 19 or a notice from the applicant that he does not wish to make such amendments (Rule 69.1(d)). *(This check-box may be marked only where the time limit under Article 19 has not yet expired.)*

\* Where no check-box is marked, international preliminary examination will start on the basis of the international application as originally filed or, where a copy of amendments to the claims under Article 19 and/or amendments of the international application under Article 34 are received by the International Preliminary Examining Authority before it has begun to draw up a written opinion or the international preliminary examination report, as so amended.

Language for the purposes of international preliminary examination: English

☒ which is the language in which the international application was filed.☐ which is the language of a translation furnished for the purposes of international search.☐ which is the language of publication of the international application.☐ which is the language of the translation (to be) furnished for the purposes of international preliminary examination.**Box No. V ELECTION OF STATES**The applicant hereby elects all eligible States *(that is, all States which have been designated and which are bound by Chapter II of the PCT)*

excluding the following States which the applicant wishes not to elect:

## Box No. VI CHECK LIST

The demand is accompanied by the following elements, in the language referred to in Box No. IV, for the purposes of international preliminary examination:

- |  |   |                |
|--|---|----------------|
| 1. translation of international application                              | : | sheets         |
| 2. amendments under Article 34   | : | sheets         |
| 3. copy (or, where required, translation) of amendments under Article 19 | : | sheets         |
| 4. copy (or, where required, translation) of statement under Article 19  | : | sheets         |
| 5. letter  | : | 1 (one) sheets |
| 6. other (specify)   | : | sheets         |

For International Preliminary Examining Authority use only

received not received

<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>

The demand is also accompanied by the item(s) marked below:

- |  |   |
|--|---|
| 1. <input checked="" type="checkbox"/> fee calculation sheet                             | 4. <input type="checkbox"/> statement explaining lack of signature                                  |
| 2. <input type="checkbox"/> separate signed power of attorney                            | 5. <input type="checkbox"/> nucleotide and or amino acid sequence listing in computer readable form |
| 3. <input type="checkbox"/> copy of general power of attorney; reference number, if any: | 6. <input type="checkbox"/> other (specify):  |

## Box No. VII SIGNATURE OF APPLICANT, AGENT OR COMMON REPRESENTATIVE

Next to each signature, indicate the name of the person signing and the capacity in which the person signs (if such capacity is not obvious from reading the demand).



YEW WOON CHOOI (Ms)  
HELEN YEO & PARTNERS

## For International Preliminary Examining Authority use only

- Date of actual receipt of DEMAND: 15 September 2000 (15.09.00)
- Adjusted date of receipt of demand due to CORRECTIONS under Rule 60.1(b):
- ☐ The date of receipt of the demand is AFTER the expiration of 19 months from the priority date and item 4 or 5, below, does not apply.
 ☐ The applicant has been informed accordingly.
- ☐ The date of receipt of the demand is WITHIN the period of 19 months from the priority date as extended by virtue of Rule 80.5.
- ☐ Although the date of receipt of the demand is after the expiration of 19 months from the priority date, the delay in arrival is EXCUSED pursuant to Rule 82.

## For International Bureau use only

Demand received from IPEA on:



## PCT

## FEE CALCULATION SHEET

Annex to the Demand for international preliminary examination

International application No.    PCT/SG 99/00020 <hr/> Applicant's or agent's file reference    YWC/99358451	For International Preliminary Examining Authority use only <hr/> Date stamp of the IPEA
Applicant <div style="text-align: center; margin-top: 10px;">KENT RIDGE DIGITAL LABS</div>	
<b>Calculation of prescribed fees</b>  <div style="display: flex; justify-content: space-between; align-items: flex-end;"> <div style="width: 40%;">           1. Preliminary examination fee .....         </div> <div style="width: 30%; text-align: center;"> <div style="border: 1px solid black; padding: 2px;">ATS 2,200.00</div> <div style="border: 1px solid black; padding: 2px; width: 20px; text-align: center;">P</div> </div> <div style="width: 30%;"></div> </div> <div style="display: flex; justify-content: space-between; align-items: flex-end;"> <div style="width: 40%;">           2. Handling fee (<i>Applicants from certain States are entitled to a reduction of 75% of the handling fee. Where the applicant is (or all applicants are) so entitled, the amount to be entered at H is 25% of the handling fee.</i>) .....         </div> <div style="width: 30%; text-align: center;"> <div style="border: 1px solid black; padding: 2px;">ATS 2,022.76</div> <div style="border: 1px solid black; padding: 2px; width: 20px; text-align: center;">H</div> </div> <div style="width: 30%;"></div> </div> <div style="display: flex; justify-content: space-between; align-items: flex-end;"> <div style="width: 40%;">           3. Total of prescribed fees            Add the amounts entered at P and H            and enter total in the TOTAL box .....         </div> <div style="width: 30%; text-align: center;"> <div style="border: 1px solid black; padding: 2px;">ATS 4,222.76</div> <div style="border: 1px solid black; padding: 2px; width: 100px; text-align: center;">TOTAL</div> </div> <div style="width: 30%;"></div> </div>	
<b>Mode of Payment</b> <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <input type="checkbox"/> authorization to charge deposit account with the IPEA (see below)  <input type="checkbox"/> cheque  <input type="checkbox"/> postal money order  <input type="checkbox"/> bank draft         </div> <div style="width: 50%;"> <input type="checkbox"/> cash  <input type="checkbox"/> revenue stamps  <input type="checkbox"/> coupons  <input checked="" type="checkbox"/> other (specify):              transfer to posted check account              at Oesterreichische Postsparkasse              in Vienna (No. 05760.000)         </div> </div>	
<b>Deposit Account Authorization</b> ( <i>this mode of payment may not be available at all IPEAs</i> ) The IPEA/ _____ <input type="checkbox"/> is hereby authorized to charge the total fees indicated above to my deposit account.  <input type="checkbox"/> ( <i>this check-box may be marked only if the conditions for deposit accounts of the IPEA so permit</i> ) is hereby authorized to charge any deficiency or credit any overpayment in the total fees indicated above to my deposit account.	
Deposit Account Number _____	Date (day/month/year) _____
Signature _____	

PTO/PCT Rec'd PCT - SEP 2001

From the INTERNATIONAL BUREAU

**NOTICE INFORMING THE APPLICANT OF THE  
COMMUNICATION OF THE INTERNATIONAL  
APPLICATION TO THE DESIGNATED OFFICES**

(PCT Rule 47.1(c), first sentence)

To:

HELEN YEO & PARTNERS  
80 Raffles Place  
#33-00 UOB Plaza 1  
Singapore 048624  
SINGAPOUR

*Heard,  
re report*

Date of mailing (day/month/year) 28 September 2000 (28.09.00)		
Applicant's or agent's file reference YWC/99358451		<b>IMPORTANT NOTICE</b>
International application No. PCT/SG99/00020	International filing date (day/month/year) 22 March 1999 (22.03.99)	
Priority date (day/month/year)		
Applicant KENT RIDGE DIGITAL LABS et al		

1. Notice is hereby given that the International Bureau has communicated, as provided in Article 20, the international application to the following designated Offices on the date indicated above as the date of mailing of this Notice:  
US

In accordance with Rule 47.1(c), third sentence, those Offices will accept the present Notice as conclusive evidence that the communication of the international application has duly taken place on the date of mailing indicated above and no copy of the international application is required to be furnished by the applicant to the designated Office(s).

2. The following designated Offices have waived the requirement for such a communication at this time:  
EP,JP,SG

The communication will be made to those Offices only upon their request. Furthermore, those Offices do not require the applicant to furnish a copy of the international application (Rule 49.1(a-bis)).

3. Enclosed with this Notice is a copy of the international application as published by the International Bureau on 28 September 2000 (28.09.00) under No. WO 00/57595

**REMINDER REGARDING CHAPTER II (Article 31(2)(a) and Rule 54.2)**

If the applicant wishes to postpone entry into the national phase until 30 months (or later in some Offices) from the priority date, a demand for international preliminary examination must be filed with the competent International Preliminary Examining Authority before the expiration of 19 months from the priority date.

It is the applicant's sole responsibility to monitor the 19-month time limit.

Note that only an applicant who is a national or resident of a PCT Contracting State which is bound by Chapter II has the right to file a demand for international preliminary examination.

**REMINDER REGARDING ENTRY INTO THE NATIONAL PHASE (Article 22 or 39(1))**

If the applicant wishes to proceed with the international application in the national phase, he must, within 20 months or 30 months, or later in some Offices, perform the acts referred to therein before each designated or elected Office.

For further important information on the time limits and acts to be performed for entering the national phase, see the Annex to Form PCT/IB/301 (Notification of Receipt of Record Copy) and Volume II of the PCT Applicant's Guide.

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer  J. Zahra
Facsimile No. (41-22) 740.14.35	Telephone No. (41-22) 338.83.38

Continuation of Form PCT/IB/308

NOTICE INFORMING THE APPLICANT OF THE COMMUNICATION OF  
THE INTERNATIONAL APPLICATION TO THE DESIGNATED OFFICES

Date of mailing (day/month/year) 28 September 2000 (28.09.00)	IMPORTANT NOTICE
Applicant's or agent's file reference YWC/99358451	International application No. PCT/SG99/00020
<p>The applicant is hereby notified that, at the time of establishment of this Notice, the time limit under Rule 46.1 for making amendments under Article 19 has not yet expired and the International Bureau had received neither such amendments nor a declaration that the applicant does not wish to make amendments.</p>	

# PCT

PCT/RO/101  
REQUEST

The undersigned requests that the present international application be processed according to the Patent Cooperation Treaty.

For receipt Office use only

International Application No.

International Filing Date

Name of receiving Office and "PCT International Application"

Applicant's or agent's file reference  
(if desired) (12 characters maximum)

YWC/99358451

## Box No. I TITLE OF INVENTION

METHOD AND APPARATUS FOR ENCRYPTING AND DECRYPTING DATA

## Box No. II APPLICANT

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

KENT RIDGE DIGITAL LABS  
21 Heng Mui Keng Terrace  
SINGAPORE 119613  
REPUBLIC OF SINGAPORE

☐ This person is also inventor.

Telephone No.  
(65) 874 7588

Facsimile No.  
(65) 776 8109

Teleprinter No.  
N.A.

State (that is, country) of nationality:  
SG

State (that is, country) of residence:  
SG

This person is applicant for the purposes of: ☐ all designated States ☒ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the Supplemental Box

## Box No. III FURTHER APPLICANT(S) AND/OR (FURTHER) INVENTOR(S)

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

BAO, FENG  
37 West Coast Park  
#04-06, Parkview Condo  
SINGAPORE 127653  
REPUBLIC OF SINGAPORE

This person is:

☐ applicant only

☒ applicant and inventor

☐ inventor only (If this check-box is marked, do not fill in below.)

State (that is, country) of nationality:  
CN

State (that is, country) of residence:  
SG

This person is applicant for the purposes of: ☐ all designated States ☐ all designated States except the United States of America ☒ the United States of America only ☐ the States indicated in the Supplemental Box

☒ Further applicants and/or (further) inventors are indicated on a continuation sheet.

## Box No. IV AGENT OR COMMON REPRESENTATIVE; OR ADDRESS FOR CORRESPONDENCE

The person identified below is hereby/has been appointed to act on behalf of the applicant(s) before the competent International Authorities as:

☒ agent

☐ common representative

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)

HELEN YEO & PARTNERS  
11 Collyer Quay  
#12-01 The Arcade  
SINGAPORE 049317  
REPUBLIC OF SINGAPORE

Telephone No.  
(65) 4221-609 (DID)

Facsimile No.  
(65) 225-1586

Teleprinter No.  
N.A.

☐ Address for correspondence: Mark this check-box where no agent or common representative is/has been appointed and the space above is used instead to indicate a special address to which correspondence should be sent.

Continuation of Box No. III FURTHER APPLICANT(S) AND/OR (FURTHER) INVENTOR(S)

*If none of the following sub-boxes is used, this sheet should not be included in the request.*

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

DENG, HUIJIE, ROBERT  
2 Namly Rise  
SINGAPORE 267110  
REPUBLIC OF SINGAPORE

This person is:

- ☐ applicant only  
☒ applicant and inventor  
☐ inventor only (If this check-box is marked, do not fill in below.)

State (that is, country) of nationality:  
SG

State (that is, country) of residence:  
SG

This person is applicant for the purposes of: ☐ all designated States ☐ all designated States except the United States of America ☒ the United States of America only ☐ the States indicated in the Supplemental Box

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

PANG, HWEE HWA  
19 Shelford Road  
#01-42  
SINGAPORE 288408  
REPUBLIC OF SINGAPORE

This person is:

- ☐ applicant only  
☒ applicant and inventor  
☐ inventor only (If this check-box is marked, do not fill in below.)

State (that is, country) of nationality:  
SG

State (that is, country) of residence:  
SG

This person is applicant for the purposes of: ☐ all designated States ☐ all designated States except the United States of America ☒ the United States of America only ☐ the States indicated in the Supplemental Box

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

This person is:

- ☐ applicant only  
☐ applicant and inventor  
☐ inventor only (If this check-box is marked, do not fill in below.)

State (that is, country) of nationality:

State (that is, country) of residence:

This person is applicant for the purposes of: ☐ all designated States ☐ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the Supplemental Box

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

This person is:

- ☐ applicant only  
☐ applicant and inventor  
☐ inventor only (If this check-box is marked, do not fill in below.)

State (that is, country) of nationality:

State (that is, country) of residence:

This person is applicant for the purposes of: ☐ all designated States ☐ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the Supplemental Box

☐ Further applicants and/or (further) inventors are indicated on another continuation sheet.

Box No.V DESIGNATION OF STATES

The following designations are hereby made under Rule 4.9(a) (mark the applicable check-boxes; at least one must be marked):

Regional Patent

- ☐ AP ARIPO Patent: GH Ghana, GM Gambia, KE Kenya, LS Lesotho, MW Malawi, SD Sudan, SZ Swaziland, UG Uganda, ZW Zimbabwe, and any other State which is a Contracting State of the Harare Protocol and of the PCT
- ☐ EA Eurasian Patent: AM Armenia, AZ Azerbaijan, BY Belarus, KG Kyrgyzstan, KZ Kazakhstan, MD Republic of Moldova, RU Russian Federation, TJ Tajikistan, TM Turkmenistan, and any other State which is a Contracting State of the Eurasian Patent Convention and of the PCT
- ☒ EP European Patent: AT Austria, BE Belgium, CH and LI Switzerland and Liechtenstein, CY Cyprus, DE Germany, DK Denmark, ES Spain, FI Finland, FR France, GB United Kingdom, GR Greece, IE Ireland, IT Italy, LU Luxembourg, MC Monaco, NL Netherlands, PT Portugal, SE Sweden, and any other State which is a Contracting State of the European Patent Convention and of the PCT
- ☐ OA OAPI Patent: BF Burkina Faso, BJ Benin, CF Central African Republic, CG Congo, CI Côte d'Ivoire, CM Cameroon, GA Gabon, GN Guinea, GW Guinea-Bissau, ML Mali, MR Mauritania, NE Niger, SN Senegal, TD Chad, TG Togo, and any other State which is a member State of OAPI and a Contracting State of the PCT (if other kind of protection or treatment desired, specify on dotted line)

National Patent (if other kind of protection or treatment desired, specify on dotted line):

- |   |   |
|---|---|
| <input type="checkbox"/> AL Albania                               | <input type="checkbox"/> LS Lesotho                                   |
| <input type="checkbox"/> AM Armenia                               | <input type="checkbox"/> LT Lithuania                                 |
| <input type="checkbox"/> AT Austria                               | <input type="checkbox"/> LU Luxembourg                                |
| <input type="checkbox"/> AU Australia                             | <input type="checkbox"/> LV Latvia                                    |
| <input type="checkbox"/> AZ Azerbaijan                            | <input type="checkbox"/> MD Republic of Moldova                       |
| <input type="checkbox"/> BA Bosnia and Herzegovina                | <input type="checkbox"/> MG Madagascar                                |
| <input type="checkbox"/> BB Barbados                              | <input type="checkbox"/> MK The former Yugoslav Republic of Macedonia |
| <input type="checkbox"/> BG Bulgaria                              |   |
| <input type="checkbox"/> BR Brazil                                | <input type="checkbox"/> MN Mongolia                                  |
| <input type="checkbox"/> BY Belarus                               | <input type="checkbox"/> MW Malawi                                    |
| <input type="checkbox"/> CA Canada                                | <input type="checkbox"/> MX Mexico                                    |
| <input type="checkbox"/> CH and LI Switzerland and Liechtenstein  | <input type="checkbox"/> NO Norway                                    |
| <input type="checkbox"/> CN China                                 | <input type="checkbox"/> NZ New Zealand                               |
| <input type="checkbox"/> CU Cuba                                  | <input type="checkbox"/> PL Poland                                    |
| <input type="checkbox"/> CZ Czech Republic                        | <input type="checkbox"/> PT Portugal                                  |
| <input type="checkbox"/> DE Germany                               | <input type="checkbox"/> RO Romania                                   |
| <input type="checkbox"/> DK Denmark                               | <input type="checkbox"/> RU Russian Federation                        |
| <input type="checkbox"/> EE Estonia                               | <input type="checkbox"/> SD Sudan                                     |
| <input type="checkbox"/> ES Spain                                 | <input type="checkbox"/> SE Sweden                                    |
| <input type="checkbox"/> FI Finland                               | <input checked="" type="checkbox"/> SG Singapore                      |
| <input type="checkbox"/> GB United Kingdom                        | <input type="checkbox"/> SI Slovenia                                  |
| <input type="checkbox"/> GD Grenada                               | <input type="checkbox"/> SK Slovakia                                  |
| <input type="checkbox"/> GE Georgia                               | <input type="checkbox"/> SL Sierra Leone                              |
| <input type="checkbox"/> GH Ghana                                 | <input type="checkbox"/> TJ Tajikistan                                |
| <input type="checkbox"/> GM Gambia                                | <input type="checkbox"/> TM Turkmenistan                              |
| <input type="checkbox"/> HR Croatia                               | <input type="checkbox"/> TR Turkey                                    |
| <input type="checkbox"/> HU Hungary                               | <input type="checkbox"/> TT Trinidad and Tobago                       |
| <input type="checkbox"/> ID Indonesia                             | <input type="checkbox"/> UA Ukraine                                   |
| <input type="checkbox"/> IL Israel                                | <input type="checkbox"/> UG Uganda                                    |
| <input type="checkbox"/> IN India                                 | <input checked="" type="checkbox"/> US United States of America       |
| <input type="checkbox"/> IS Iceland                               |   |
| <input checked="" type="checkbox"/> JP Japan                      | <input type="checkbox"/> UZ Uzbekistan                                |
| <input type="checkbox"/> KE Kenya                                 | <input type="checkbox"/> VN Viet Nam                                  |
| <input type="checkbox"/> KG Kyrgyzstan                            | <input type="checkbox"/> YU Yugoslavia                                |
| <input type="checkbox"/> KP Democratic People's Republic of Korea | <input type="checkbox"/> ZW Zimbabwe                                  |
| <input type="checkbox"/> KR Republic of Korea                     |   |
| <input type="checkbox"/> KZ Kazakhstan                            |   |
| <input type="checkbox"/> LC Saint Lucia                           |   |
| <input type="checkbox"/> LK Sri Lanka                             |   |
| <input type="checkbox"/> LR Liberia                               |   |

Check-boxes reserved for designating States (for the purposes of a national patent) which have become party to the PCT after issuance of this sheet:

**Precautionary Designation Statement:** In addition to the designations made above, the applicant also makes under Rule 4.9(b) all other designations which would be permitted under the PCT except any designation(s) indicated in the Supplemental Box as being excluded from the scope of this statement. The applicant declares that those additional designations are subject to confirmation and that any designation which is not confirmed before the expiration of 15 months from the priority date is to be regarded as withdrawn by the applicant at the expiration of that time limit. (Confirmation of a designation consists of the filing of a notice specifying that designation and the payment of the designation and confirmation fees. Confirmation must reach the receiving Office within the 15-month time limit.)

Box No. VI PRIORITY CLAIM		<input type="checkbox"/> Further priority claims are indicated in the Supplemental Box.		
Filing date of earlier application (day/month/year)	Number of earlier application	Where earlier application is:		
		national application: country	regional application: regional Office	international application: receiving Office
item (1)				
item (2)				
item (3)				

☐ The receiving Office is requested to prepare and transmit to the International Bureau a certified copy of the earlier application(s) (only if the earlier application was filed with the Office which for the purposes of the present international application is the receiving Office) identified above as item(s):

\* Where the earlier application is an ARIPO application, it is mandatory to indicate in the Supplemental Box at least one country party to the Paris Convention for the Protection of Industrial Property for which that earlier application was filed (Rule 4.10(b)(ii)). See Supplemental Box.

Box No. VII INTERNATIONAL SEARCHING AUTHORITY

Choice of International Searching Authority (ISA) (if two or more International Searching Authorities are competent to carry out the international search, indicate the Authority chosen; the two-letter code may be used):

ISA /AT

Request to use results of earlier search; reference to that search (if an earlier search has been carried out by or requested from the International Searching Authority):

Date (day/month/year)

Number

Country (or regional Office)

Box No. VIII CHECK LIST; LANGUAGE OF FILING

This international application contains the following number of sheets:

request : 4  
description (excluding sequence listing part) : 9  
claims : 7  
abstract : 1  
drawings : 2  
sequence listing part of description : -

Total number of sheets : 23

This international application is accompanied by the item(s) marked below:

1. ☒ fee calculation sheet
2. ☒ separate signed power of attorney
3. ☐ copy of general power of attorney; reference number, if any:
4. ☐ statement explaining lack of signature
5. ☐ priority document(s) identified in Box No. VI as item(s):
6. ☐ translation of international application into (language):
7. ☐ separate indications concerning deposited microorganism or other biological material
8. ☐ nucleotide and/or amino acid sequence listing in computer readable form
9. ☐ other (specify):

Figure of the drawings which should accompany the abstract: 1 (One)

Language of filing of the international application: ENGLISH

Box No. IX SIGNATURE OF APPLICANT OR AGENT

Next to each signature, indicate the name of the person signing and the capacity in which the person signs (if such capacity is not obvious from reading the request).

HELEN YEO & PARTNERS

For receiving Office use only		2. Drawings:  <input type="checkbox"/> received:  <input type="checkbox"/> not received:
1. Date of actual receipt of the purported international application:		
3. Corrected date of actual receipt due to later but timely received papers or drawings completing the purported international application:		
4. Date of timely receipt of the required corrections under PCT Article 11(2):		
5. International Searching Authority (if two or more are competent): ISA /	6. <input type="checkbox"/> Transmittal of search copy delayed until search fee is paid.	

For International Bureau use only	
Date of receipt of the record copy by the International Bureau:	

# PCT

## FEE CALCULATION SHEET

### Annex to the Request

For receiving Office use only

International application No.

Date stamp of the receiving Office

Applicant's or agent's  
file reference

YWC/99358451

Applicant

KENT RIDGE DIGITAL LABS

#### CALCULATION OF PRESCRIBED FEES

1. TRANSMITTAL FEE . . . . . 135 T

2. SEARCH FEE . . . . . 313 S

International search to be carried out by AT  
(If two or more International Searching Authorities are competent in relation to the international application, indicate the name of the Authority which is chosen to carry out the international search.)

3. INTERNATIONAL FEE

#### Basic Fee

The international application contains 23 sheets.

first 30 sheets . . . . . 820 b1

remaining sheets x additional amount = - b2

Add amounts entered at b1 and b2 and enter total at B . . . . . 820 B

#### Designation Fees

The international application contains 4 designations.

4 x 190 = 760 D

number of designation fees payable (maximum 10) amount of designation fee

Add amounts entered at B and D and enter total at I . . . . . 1580 I

(Applicants from certain States are entitled to a reduction of 75% of the international fee. Where the applicant is (or all applicants are) so entitled, the total to be entered at I is 25% of the sum of the amounts entered at B and D.)

4. FEE FOR PRIORITY DOCUMENT (if applicable) . . . . . P

5. TOTAL FEES PAYABLE . . . . . 2028

Add amounts entered at T, S, I and P, and enter total in the TOTAL box

TOTAL

☐ The designation fees are not paid at this time.

#### MODE OF PAYMENT

☐ authorization to charge  
deposit account (see below)

☐ bank draft

☐ coupons

☒ cheque

☐ cash

☐ other (specify):

☐ postal money order

☐ revenue stamps

#### DEPOSIT ACCOUNT AUTHORIZATION (this mode of payment may not be available at all receiving Offices)

The RO/ ☐ is hereby authorized to charge the total fees indicated above to my deposit account.

☐ (this check-box may be marked only if the conditions for deposit accounts of the receiving Office so permit) is hereby authorized to charge any deficiency or credit any overpayment in the total fees indicated above to my deposit account.

☐ is hereby authorized to charge the fee for preparation and transmittal of the priority document to the International Bureau of WIPO to my deposit account.

Deposit Account No.

Date (day/month/year)

Signature



## SECOND SCHEDULE — continued

PATENTS FORM 48

SINGAPORE  
PATENTS ACT  
(CHAPTER 221)  
PATENTS RULES

Rule 117

The Registrar,  
Registry of Patents.PAYMENT OF TRANSMITTAL FEE UNDER RULE 14 OF THE  
REGULATIONS UNDER THE PATENT CO-OPERATION TREATY

## NOTES:

1. This form should be completed by the applicant(s) who filed an international application for a patent (Singapore), who should enter his/their name(s) and address(es) and the number of the relevant International Application in the spaces provided.
2. Attention is drawn to rules 90 and 105 of the Patents Rules.

I/We ..... KENT RIDGE DIGITAL LABS  
..... 21 Heng Mui Keng Terrace  
..... SINGAPORE 119613  
..... REPUBLIC OF SINGAPORE

the applicant(s) in respect of an international application for a patent (Singapore) filed under the Patent Co-operation Treaty, having international application No .....  
transmit the transmittal fee payable in accordance with rule 14(1) of the Regulations under the Patent Co-operation Treaty in respect of my/our international application.

Signature(s) .....  
(See note 2)

Date ..... 20 March 19 99

Name of Agent (if any) ..... HELEN YEO & PARTNERS

Address for service in Singapore to ..... 11 Collyer Quay #12-01  
The Arcade, SINGAPORE  
which all communications should be sent ..... 049317

## PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

PCT

To:

HELEN YEO & PARTNERS  
11 Collyer Quay  
#12-01 The Arcade  
SINGAPORE 049317  
REPUBLIC OF SINGAPORE

PTO/PCT Rec'd 21 SEP 2000

NOTIFICATION OF TRANSMITTAL OF  
THE INTERNATIONAL SEARCH REPORT  
OR THE DECLARATION

(PCT Rule 44.1)

Date of mailing  
(day/month/year) 23 August 2000 (23.08.00)

Applicant's or agent's file reference

YWC/99358451

FOR FURTHER ACTION See paragraphs 1 and 4 below

International application No.

PCT/SG 99/00020

International filing date (day/month/year)

22 March 1999 (22.03.99)

Applicant

KENT RIDGE DIGITAL LABS et al.

1. ☒ The applicant is hereby notified that the international search report has been established and is transmitted herewith.

**Filing of amendments and statements under Article 19:**

The applicant is entitled, if he so wishes, to amend the claims of the international application (see Rule 46):

**When?** The time limit for filing such amendments is normally two months from the date of transmittal of the international search report; however, for more details, see the notes on the accompanying sheet.

**Where?** Directly to the International Bureau of WIPO  
34, chemin des Colombettes  
1211 Geneva 20, Switzerland  
Facsimile No.: (41-22) 740.14.35

For more detailed instructions, see the notes on the accompanying sheet.

2. ☐ The applicant is hereby notified that no international search will be established and that the declaration under Article 17(2)(a) to that effect is transmitted herewith.
3. ☐ With regard to the protest against payment of (an) initial fee(s) under Rule 40.2, the applicant is notified that:
- ☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the text of both the protest decision thereon to the designated Offices
  - ☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Further action(s):** The applicant is reminded of the following:

Shortly after 18 months from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in Rules 90bis. 1 and 90bis.3, respectively, before the completion of the technical preparations for international publication.

Within 19 months from the priority date, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase until 30 months from the priority date (in some Offices even later).

Within 20 month from the priority date, the applicant must perform the prescribed acts for entry into the national phase before all designated Offices which have not been elected in the demand or in a later election within 19 months from the priority date or could not be elected because they are not bound by Chapter II.

Name and mailing address of the IPEA/AT

Austrian Patent Office

Kohlmarkt 8-10

A-1014 Vienna

Facsimile No. 1/53424/200

Authorized officer:

Koch

Telephone No. +43 / 1 / 53424 - 450

65 557 2322

## PATENT COOPERATION TREA

## PCT

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference YWC/99358451	FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.
International application No. PCT/SG 99/00020	International filing date (day/month/year) 22 March 1999 (22.03.1999)
(Earliest) Priority Date (day/month/year)	
Applicant KENT RIDGE DIGITAL LABS et al.	

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 3 sheets.

☐ It is also accompanied by a copy of each prior art document cited in this report.

## 1. Basis of the report

a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international search was carried out on the basis of the sequence listing:

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

2. ☐ Certain claims were found unsearchable (See Box I).

3. ☐ Unity of invention is lacking (See Box II).

4. With regard to the title,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the abstract,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the drawings to be published with the abstract is Figure No.: 1

☒ as suggested by the applicant.

☐ None of the figures.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/SG 99/00020

## CLASSIFICATION OF SUBJECT MATTER

IPC<sup>7</sup>: H 04 L 9/00

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC<sup>7</sup>: H 04 L; H 04 N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

WPI, PAJ

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages <sup>*</sup>	Relevant to claim No.
A	EP 0676876 A1 (INTERNATIONAL BUSINESS MACHINES CORPORATION) 11 October 1995 (11.10.95) abstract; page 3, line 33 - page 4, line 22; page 4, line 53 - page 5, line 8; fig. 1-4,6	1,14,24,37
A	WO 96/08912 A2 (TITAN INFORMATIONS SYSTEMS) 21 March 1996 (21.03.96) abstract; page 7, line 1 - page 11, line 15; fig. 1-3	1,14,24,37
A	US 5664016 A (PRENEEL et al.) 2 September 1997 (02.09.97) column 2, lines 54-67; column 6, lines 47-60; fig. 5.	1,5,6,24,28,29
A	JP 10-178421 A (TOSHIBA). Patent abstracts of Japan, Vol. 98, No. 11, 30 September 1998 (30.09.98)	1,24

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

<sup>\*</sup> Special categories of cited documents:

„A“ document defining the general state of the art which is not considered to be of particular relevance

„E“ earlier application or patent but published on or after the international filing date

„L“ document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

„O“ document referring to an oral disclosure, use, exhibition or other means

„P“ document published prior to the international filing date but later than the priority date claimed

„T“ later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

„X“ document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

„Y“ document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

„&“ document member of the same patent family

Date of the actual completion of the international search

21 August 2000 (21.08.2000)

Date of mailing of the international search report

23 August 2000 (23.08.2000)

Name and mailing address of the ISA/AT

Austrian Patent Office

Kohlmarkt 8-10; A-1014 Vienna

Facsimile No. 1/53424/535

Authorized officer

Hajos

Telephone No. 1/53424/410

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No.

PCT/SG 99/00020

Patent document cited in search report			Publication date	Patent family member(s)		Publication date	
EP	A1	676876	11-10-1995	GB	A0	9406613	09-06-1994
				GB	A1	2288519	13-10-1995
				JP	A2	7281596	27-10-1995
				US	A	5548648	20-08-1996
JP	A2	10178421	30-06-1998	none			
US	A	5664016	02-09-1997	none			
WO	A2	9608912	21-03-1996	AU	A1	44619/96	29-03-1996
WO	A3	9608912	06-06-1996	CA	AA	2199526	21-03-1996
				EP	A1	787391	06-08-1997
				EP	A4	787391	08-04-1998
				US	A	5796829	18-08-1998

# PATENT COOPERATION TREATY

## PCT

REC'D 11 DEC 2001

WFO

PCT

### INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

91937634

Applicant's or agent's file reference <b>YWC/hc/99358451</b>	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. <b>PCT/SG 99/00020</b>	International filing date (day/month/year) <b>22 March 1999 (22.03.1999)</b>	Priority Date (day/month/year)
International Patent Classification (IPC) or national classification and IPC <b>IPC<sup>7</sup>: H04L 9/00</b>		
Applicant <b>Kent Ridge Digital Labs et al.</b>		

- This international preliminary examination report has been prepared by this International Preliminary Examination Authority and is transmitted to the applicant according to Article 36.
- This REPORT consists of a total of 4 sheets, including this cover sheet.  
☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of \_\_\_\_\_ sheets.

**RECEIVED**

- This report contains indications relating to the following items:

- ☒ Basis of the opinion
- ☐ Priority
- ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Lack of unity of invention
- ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability: citations and explanations supporting such statement
- ☐ Certain documents cited
- ☐ Certain defects in the international application
- ☐ Certain observations on the international application

**FEB 19 2002**  
**Technology Center 2100**

Date of submission of the demand <b>15 September 2000 (15.09.2000)</b>	Date of completion of this report <b>15 November 2001 (15.11.2001)</b>
Name and mailing address of the IPEA/AT <b>Austrian Patent Office Kohlmarkt 8-10 A-1014 Vienna Facsimile No. 1/53424/200</b>	Authorized officer <b>MESA PASCASIO</b> Telephone No. 1/53424/327

Form PCT/IPEA/409 (cover sheet) (July 1998)

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.  
PCT/SG 99/00020**I. Basis of the report****1. With regard to the elements of the international application:\***

- ☒ the international application as originally filed
- ☐ the description:  
pages \_\_\_\_\_, as originally filed  
pages \_\_\_\_\_, filed with the demand  
pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_.
- ☐ the claims:  
pages \_\_\_\_\_, as originally filed  
pages \_\_\_\_\_, as amended (together with any statement) under Article 19  
pages \_\_\_\_\_, filed with the demand  
pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_.
- ☐ the drawings:  
pages \_\_\_\_\_, as originally filed  
pages \_\_\_\_\_, filed with the demand  
pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_.
- ☐ the sequence listing part of the description:  
pages \_\_\_\_\_, as originally filed  
pages \_\_\_\_\_, filed with the demand  
pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_.

**2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.**

These elements were available or furnished to this Authority in the following language \_\_\_\_\_ which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

**3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:**

- ☐ contained in the international application in printed form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

**4. ☐ The amendments have resulted in the cancellation of:**

- ☐ the description, pages \_\_\_\_\_.
- ☐ the claims, Nos. \_\_\_\_\_.
- ☐ the drawings, sheets/fig \_\_\_\_\_.

**5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).\*\***

\* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as „originally filed“ and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

\*\* Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.  
PCT/SG 99/00020

## V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement	Novelty (N)	Claims 1-46	YES
		Claims	NO
Inventive step (IS)		Claims 1-46	YES
		Claims	NO
Industrial applicability (IA)		Claims 1-46	YES
		Claims	NO

### Citations and explanations (Rule 70.7)

The following documents have been cited in the Search Report:

D1: EP 0676876 A1  
D2: WO 96/08912 A2  
D3: US 5664016 A  
D4: JP 10-178421 A

Document D1 provides an encryption method and system for encrypting data suitable for sending to a decryption party. Therefore, the data is divided into control and data segments of varying length, wherein the control blocks contain the whole information necessary to decrypt the data contained in the encrypted data blocks.

Document D2 provides a conditional access system for encrypted information segments from data service providers. Therefore, a decrypter which decipheres received data segments using session key which is used in encryption algorithm for one of conditional access processes is provided.

Document D3 provides a compressing method for data encryption with data segments of equal length. Working variables are then introduced for preparing the data segments with key dependent constants.

Document D4 provides a method for encrypting data packets using two shared keys in a two step process. After that the key is modified and is used for the next packet.

However, the present application provides a method for encrypting data, wherein different cryptographic keys for encrypting are used. The cryptographic keys are shared with the decrypting party. Thus, the provided features cannot be found as a whole in the cited documents.

Accordingly, the present application is considered to be new and inventive.



**Supplemental Box**

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of: **Box V (page 1)**

Industrial applicability is given.